Exploring the use of personas for designing with dogs

Conference or Workshop Item

Exploring the Use of Personas for Designing with Dogs

Charlotte Robinson
Animal Computer Interaction Lab
Computing & Communications Dept
The Open University
Milton Keynes, United Kingdom
charlotte.robinson@open.ac.uk

Clara Mancini
Animal Computer Interaction Lab
Computing & Communications Dept
The Open University
Milton Keynes, United Kingdom
clara.mancini@open.ac.uk

Janet van der Linden
Animal Computer Interaction Lab
Computing & Communications Dept
The Open University
Milton Keynes, United Kingdom
janet.vanderlinden@open.ac.uk

Lydia Swanson
Medical Detection Dogs
Milton Keynes, MK17 0NP, United Kingdom
lydia.swanson@medicaldetectiondogs.org.uk

Claire Guest
Medical Detection Dogs
Milton Keynes, MK17 0NP, United Kingdom
claire.guest@medicaldetectiondogs.org.uk

Abstract
In HCI designers use personas as aids to explore a design space. Animal Computer Interaction (ACI) aims to design for multi-species users, thus here we explore the use of canine personas for investigating requirements for a canine emergency alert system enabling assistance dogs to call for help on behalf of their vulnerable owners in an emergency. Based on our work with canine users, we discuss potential benefits and pitfalls of using personas for non-human users.

Author Keywords
Interaction design; animal-computer interaction; user-centered design

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction
Animal-Computer Interaction (ACI) [5] is an emerging field that, partly informed by existing user-centered HCI methods, aims to develop interactive technology for animal users. One popular HCI user-centered design tool is that of the "persona". Personas are fictional users that represent real user types - for example, describing the habits, likes and dislikes, typical behaviors, and goals of a potential visitor to a website. The use of personas [10] can help designers focus on the users and their needs [2] and communicate their ideas [8]. However, personas have not yet been applied

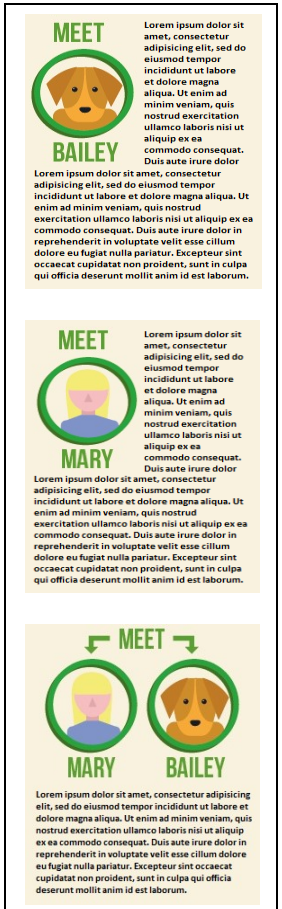

Figure 1. When designing for canine users who are assistance dogs, a designer might also create a persona for the dog's owner as well as a composite persona for the partnership.

within ACI. What would be the potential risks and benefits of developing and using personas for non-human users?

To address this question, we explore the use of personas for non-human animal users within a particular design application: an emergency alarm system designed to enable trained assistance dogs to call for help on behalf of their owner. The alarm has an interface that a dog can independently activate to summon remote help when their owner has collapsed, become immobilized, or is experiencing some kind of emergency. To enable the dog to perform his task, the interface needs to account for the physical and psychological characteristics of the dog, as well as the domestic and social environment of the human-canine partnership of which the dog is part [9] (Fig. 1). To help us explore the complex interdependencies of such a design context, we experimented with the use of personas. We analyzed data collected from potential users of such an alarm, a selection of Mobility Service Dogs and Medical Detection Dogs, to see what dimensions of their personalities and environments could be helpful in understanding the requirements for the interface. Here we discuss the issues we have encountered when designing personas for canine users, such as the risk of focusing on non-relevant descriptive dimensions and misrepresenting the animals. This risk is compounded by the difficulty of 'accessing' the animals, requiring the mediation of experts. Despite these issues, we propose that canine personas may facilitate communication within a multidisciplinary research team of dog trainers, behavioral experts, and interaction designers, helping them focus on and better identify the requirements of non-human users.

Background

One motivation for using a persona is to 'humanize' the user and make it easier for the designer to relate to them, thus allowing the designer to attain a deeper understanding of the user's requirements; this is more effective if the personas are created from real user data rather than imagined users. However, gathering data from potential animal users may present additional challenges that would not be as likely to occur with human users. For example, non-human users are not able to verbally answer surveys or participate in traditional interviews, so designers may need to rely on experts (handlers, owners, trainers, veterinarians, etc.) to gather data. Despite these challenges, methods for gathering requirements from canine users have been explored, such as preference testing [3], multi-species ethnography [6] and rapid prototyping [9]. Here we investigate using personas that have been informed by data gathered methods such as those above to facilitate a deeper understanding of the animal user.

Developing Personas for Assistance Dogs and Human Partnerships

To explore the potential advantages and pitfalls of using a persona-like construct in our research, we analyzed data collected from dog-human partnerships that might benefit from a canine emergency alarm. Our canine users varied in terms of living environment, age, personality, and tasks they might perform. However, while typical descriptive parameters for a human persona may include age, marital status, whether they have children or not, and their opinion on technologies, such parameters are unlikely to be as relevant when looking at canine users. For example, while a persona for a human user of a panic-button alarm may include their attitudes towards new technologies, a dog's "persona" might rather include a description of how eager they are to learn new tasks. Consider two brief summaries of dog personas based on patterns we have observed during our research:

Bailey (Fig. 2) is a large, four year old male shepherd-type assistance dog. His occupation mainly consists of retrieving objects for his owner, who is confined to a wheelchair. Often, when his owner drops something on the floor, Bailey picks it up with his mouth and brings it

Figure 2. "Bailey" (above) and "Dottie" (below)

to her before she even asks him to retrieve it. Bailey stays at home when his owner goes to work for four hours a day but is always by her side when she is at home or running errands. He hates cats, loves children, and prefers playing fetch to playing tug. Tennis balls are his absolute favorite. He is confident in new situations, but when his owner gets in to trouble he shows signs of stress.

Dottie (Fig. 2) is a medium-small, five year old terrier-type mixed-breed assistance dog. Her job is to warn her owner, who has Type 1 Diabetes, if the owner's blood sugar levels are going too low. Dottie goes everywhere, including planes, with her owner. She avoids all other animals, unless they are dogs she already knows well. Dottie isn't too keen when her owner's children have made high-pitch noises and gets very worked up when she hears a neighbor's cat screeching. Dottie isn't especially playful with toys, but loves running around in circles at high speeds outside. She is shy in new situations and her owner has noticed that Dottie is less likely to warn him about his dropping blood sugar if they are in an environment with a lot of distractions or unfamiliar faces.

Below are examples of how characteristics of the above personas can help inform the design:

Size: Physical size is relevant because an interface that takes height or strength to activate may be impractical or impossible for users like Dottie. Information about Dottie's small size included in a persona will help designers to reflect on how the positioning of the alarm needs to take into account the physical size of a dog.

Attitude: A canine user's personality and attitude are relevant because they may affect their ability to engage with a particular interface, depending on how challenging or unfamiliar it is. While a challenge may engage a user like Bailey, Dottie may become unconfident and not be able to interact with the interface under pressure unless it is extremely intuitive.

Play: Information relating to play behavior is relevant; an interface must be intuitive and natural to a dog, and play can expose what the dog is comfortable with doing physically. On the other hand, an interface shaped as a ball-like object may be too appealing to a dog like Bailey, who may want to engage with the interface when it is not actually an emergency.

Discussion

Our early exploration shows that the use of personas within ACI research could complement other methods when eliciting design requirements for non-human users. Specifically, in the case of canine users, well-developed personas based on user data can help clarify the design challenge for researchers with different backgrounds (e.g., computer scientists and veterinarians) and direct the design process by better enabling communication and collaboration in multidisciplinary ACI teams.

Personas have been shown to serve as a bridge across disciplines, as a reference point to maintain focus on the user. We noticed that, when introducing new people to the emergency alarm design problem, providing a realistic user scenario made it easier for researchers to communicate with one another about a particular use case or design element. Well-developed personas make scenarios easier to develop, helping designers understand different requirements. For example, consider a scenario where a dog is alone at home with their owner when this suddenly collapses; the dog is fully alert and wants to help but has no tool to do so. Such a scenario helps clarify the problem that the dog has, the task he needs to accomplish, and the challenges that he faces, However, it is the use of canine personas (including information about a dog's likes, habits, typical behaviors, environment, and personality) that can provide insights into specific requirements different user types might have. For example, the inclusion of whether a dog is confident or

not, and how attached they are to their owner, may help designers bear in mind that for an anxious dog an alarm positioned far away from their owner in an emergency may be harder to use than for less anxious dogs. This brings attention to the fact that proximity or mobility of the alarm are an important design requirement.

Of course, without ethnographic data (preferably both quantitative and qualitative), essential user characteristics could be missed when creating non-human animal personas. However, well-developed personas informed by real users may be especially important for ACI designers, as it may be more challenging for a designer to relate to the needs of a user that has different sensory, cognitive, and ergonomic characteristics.

Conclusion

In this paper we have explored the idea that, as in HCI, the use of personas in ACI can be advantageous. We have outlined potential pitfalls, such missing relevant physical, social, or environmental aspects of when creating a persona for a different species. Specifically, due to the user being of a different species, it is likely that a canine persona will include different descriptive parameters than that of a human. However, when developed based on real data from canine users, personas could help designers better understand the user and serve as a communication tool within multidisciplinary teams designing for animal users.

References

[1] Cooper, A and Reimann, R. (2003) 'About Face: The Essentials of Interaction Design', Indianapolis: Wiley.

[2] Cooper, A (1999) 'The Inmates are Running the Asylum', New York: Sams Publishing.

[3] Lee, P., Cheok, D., James, S., Debra, L., Jie, W., Chuang, W., & Farbiz, F. (2006). A mobile pet wearable computer and mixed reality system for human–poultry interaction through the internet. *Personal and Ubiquitous Computing*, 10(5), 301-317.

[4] Long, F (2009) 'Real or Imaginary; The effectiveness of using personas in product design', Proceedings of the Irish Ergonomics Society Annual Conference, May 2009, pp1-10 Dublin.

[5] Mancini, C. (2011). Animal-computer interaction: a manifesto. *Interactions*, 18(4), 69-73.

[6] Mancini, C., van der Linden, J., Bryan, J., & Stuart, A. (2012). Exploring interspecies sensemaking: dog tracking semiotics and multispecies ethnography. Proceedings ACM UbiComp, 143-152

[7] Pruitt, J., & Adlin, T. (2010). *The persona lifecycle: keeping people in mind throughout product design*. Morgan Kaufmann.

[8] Pruitt, J., & Grudin, J. (2003, June). Personas: practice and theory. In Proceedings of the 2003 conference on Designing for user experiences (pp. 1-15). ACM.

[9] Robinson, C., Mancini, C., van der Linden, J., Guest, C., Harris, R. (2014). Title In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. ACM.

[10] Nielsen, Lene (2013): Personas. In: Soegaard, Mads and Dam, Rikke Friis (eds.). "The Encyclopedia of Human-Computer Interaction, 2nd Ed.".